

NOTES ON FOSSIL TURKEYS

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THESE notes document certain changes in the classification of the turkeys adopted in the second part of the Catalogue of Fossil Birds.

1. *Paracrax* Brodkorb

Paracrax Brodkorb, 1964, p. 303 (type by original designation *Meleagris antiqua* Marsh).

Both Shufeldt (1913) and Howard (1963) suggested that *Meleagris antiqua* Marsh (1871) is not a turkey. Study of the holotype, the distal end of a right humerus, Yale Peabody Museum no. 537, confirms this view and indicates that it is referable to the family Cracidae. The ectepicondyle is low, lying below the level of the proximal end of the external condyle, with the tubercles protruding laterally. The pit for the palmar branch of flexor carpi ulnaris is very deep. The external condyle has its distal end elevated above the internal condyle, as in *Crax*. The entepicondyle is broad in medial view, with the anconal margin forming an angle of about 45 degrees, not compressed into a point as in the turkeys.

2. *Agriocharis progenes*, new species

Agriocharis progenes Brodkorb, 1964, p. 324 (nomen nudum).

Holotype. Distal part of right tarsometatarsus with spur core (pl. 1, upper figs.), University of Michigan Museum of Paleontology no. 31034. From Rexroad Formation, uppermost Pliocene, at locality 3, Rexroad ranch, Meade County, Kansas. Collected by Claude W. Hibbard and party, summer 1953.

Referred material. All specimens are from Rexroad locality 3 and are preserved in the University of Michigan.

Premaxilla, no. 31052. Dentary, no. 47783. Portion of sternal carina, no. 31029. Left coracoid, lacking distal end (male), no. 29040; fragmentary upper part of right coracoid (male), no. 48193. Right ulnare (female), no. 48190. Complete left carpometacarpus (male), no. 29041; distal end of two right carpometacarpi (females), nos. 48188, 48194. Right femur, lacking distal end (male), no. 45912. Distal end of two left tibiotarsi (females), nos. 45970, 48191.



Distal end of right tarsometatarsus (female), no. 48189. At least one male and two females are included.

Tentatively referred material. Proximal part of right scapula, no. 45930; proximal part of juvenile left scapula, no. 45965. Both are small and represent females if correctly referred.

Diagnosis. Tarsometatarsus with spur core situated low and medially directed at angle of about 50 degrees to acrotarsial face of bone (core low and at about 45 degrees in living *A. ocellata* of Yucatan; in *A. crassipes*, from the Upper Pleistocene of Nuevo Leon, core slightly higher but angle 39 degrees; in *A. leopoldi*, from the Lower Pleistocene of Texas, core slightly higher and angle greater, 53-58.5 degrees; in *Meleagris* and *Parapavo* core elevated and directed more to rear, at angle of about 60-80 degrees). Facet for hind toe low (rather low in *A. ocellata*; elevated in *Meleagris*). Lateral distal foramen low (as in *A. ocellata*; apparently slightly higher in *A. leopoldi*; high in *Meleagris* and *Parapavo*). Inner distal foramen small but well developed in both specimens. Trochleae more divergent and intertrochlear spaces wider than in other turkeys. Inner trochlea relatively narrow (more as in *Meleagris*; wider in *A. ocellata* and *A. leopoldi*). Inner trochlea less deflected to rear than in other turkeys.

Height of middle of spur core above tip of middle trochlea, 48.8; least width of shaft, 8.1, ♀ 6.8; width through trochleae, 7.5, ♀ 6.3; width of middle trochlea, 7.5, ♀ 6.3 mm.

A male tarsometatarsus illustrated by Wetmore (1924), from the Upper Pliocene at the Gum ranch, near Benson, Arizona, is similar in size and position of the spur core and is apparently referable to *A. progenes*.

Both *A. leopoldi* (A. H. Miller and Bowman, 1956) and *A. crassipes* (L. Miller, 1940) have the spur core low on the shaft and at an angle of less than 60 degrees, characters that require their removal from the genus *Meleagris*, in which they were described.

Premaxilla and dentary relatively short, wide, and only slightly vaulted (as in *A. ocellata*; longer, narrower, and more vaulted in *Meleagris*). The lower surface of the premaxilla has a wide trans-

Plate 1. Fossil turkeys. Upper figures: *Agriocharis progenes* n. sp., holotype tarsometatarsus, Rexroad, Kansas. Lower left: *A. progenes*, referred femur, Rexroad, Kansas. Lower right: *Agriocharis anza* Howard, referred femur, Rattlesnake Point, Texas.

verse bridge anterior to the palatine vacuity, leaving a large foramen anterior to each choana. One specimen of *A. ocellata* approaches this condition by having a small prong extending laterally from the median area of the elongate choanae. Premaxillary length, from tip to nostril, 13.8; width at nostrils (restored), 13.4 mm. Ventral length of gonys, without shelf, 8.5; width of dentary at posterior end of gonys, 9.0; depth at the same point, 3.0 mm.

Sternum too fragmentary for description.

Coracoid with upper end much more strongly inflected than in other turkeys, at 75 degrees to axis of shaft (not over 60 degrees in *A. ocellata* and *Meleagris*). Head raised well above inner surface of neck, with bounding groove extending across inner side of bone (as in *A. ocellata*; in *Meleagris* neck merging gently with head, with groove incipient and present only near lip). Scapular facet obliquely elliptical (as in *A. ocellata* and *Meleagris*; rounded in *Parapavo*); its lower margin obsolete near procoracoid process (margin raised throughout in the others). Inner posterior intermuscular line slightly curved away from inner edge of shaft (more than in *A. ocellata*, less than in *Meleagris* and *Parapavo*). Outer posterior intermuscular line more curved away from outer edge of shaft than in the others. Size near that of male *A. ocellata*, but shaft relatively wider than in that or other species. Length to pneumatic foramen, 65.0; head through scapular facet, 31.0; width of head, 10.8; least width of shaft, 10.1 mm.

The two tentatively referred scapulae differ from all known turkeys in lacking the pneumatic foramen. Wetmore (1944) likewise recorded (as *Meleagrididae*, sp. ?) a non-foraminate scapula from the same locality.

Ulnare agrees with *A. ocellata* in having ulnar base short, high, and wide (in *Meleagris* ulnar base long, low, and narrow). Size smaller than in either living turkey. Length of ulnar base, 8.5; height of base, 4.9; width of ulnar facet, 4.4; height through uncinat process, 10.4 mm.

Carpometacarpus with edge of inner trochlea deeply notched proximally by Ligamentum internum ossi carpi ulnaris et metacarpi (as in *Meleagris*; notch shallower in *A. ocellata*). Carpal fossae relatively shallow (as in *A. ocellata*; somewhat deeper in *Meleagris*). Intermetacarpal tubercle well proximal (located more distally in *Meleagris*). Shaft of metacarpal II wide (as in *A. ocellata*; narrower in *Meleagris*). Facet for digit III longer than in living

turkeys. Length, 66.6; height through metacarpal I, 20.0; width through trochleae, 9.5; least width of shaft, 8.0, 6.3, 5.8; width of facet for digit II, 6.1, 4.9; protrusion of metacarpal III beyond knob of metacarpal II, 3.8 mm. The large complete specimen resembles male *A. ocellata* in size; the two fragmentary ones are somewhat smaller than the female of that species.

Femur (pl. 1, lower left) agrees with that of *A. ocellata* in having groove for Ligamentum capsulare femoris shallow and only slightly notching lesser trochanter (groove deep and lesser trochanter strongly notched in *Meleagris* and *Parapavo*). Posterior intermuscular lines fused along middle third of their length (as usual in *Agriocharis* and *Parapavo*; in *Meleagris* the lines are usually unfused, although the character is variable). Size near that of male *A. ocellata*, but shaft narrower distally. Proximal width, 25.8+; width below head, 20.0+; least width of shaft, 9.2; least depth of shaft, 8.4 mm.

Tibiotarsi of the three genera of turkeys seem indistinguishable except on size. The two fossils are small, resembling female *A. ocellata*, and thus smaller than *Meleagris* and *Parapavo*. Distal width (48191), 14.5; depth of internal condyle (48191), 15.2; depth of external condyle (45970), 13.0 mm.

Wetmore (1944) reported a tibiotarsus from Rexroad locality 3 as *Meleagris gallopavo*, noting that it was small. In the light of our present knowledge of the Rexroad turkey, this specimen may be referred to *A. progenes*, and the record of the living wild turkey should be deleted from the Pliocene.

Etymology. Greek *progenes* (born in olden times), referring to the fact that this is the oldest turkey known.

3. *Agriocharis anza* Howard

Agriocharis sp., Hibbard, 1960, p. 20 (Knox County, Texas).

Agriocharis anza Howard, 1963, p. 19, pl. 3 (Middle Pleistocene, Palm Springs Formation, Arroyo Tapiado, California; type right humerus and associated fragments of left humerus, sternum, sacrum, and ulna, Los Angeles County, Mus.).

Referred specimen. Right femur, lacking distal end, Univ. Mich. Mus. Paleo. no. 39387, from Middle Pleistocene, Seymour Formation, at Rattlesnake Point, north side of South Fork of Wichita River, 4 miles south and ½ mile east of Gilliland, Knox

County, Texas; collected by Walter W. Dalquest, March 6, 1956 (pl. 1, lower right).

Description. Lesser trochanter unnotched and groove for Ligamentum capsulare femoris obsolete; posterior intermuscular lines fused along middle third of their length; medial border of shaft flaring broadly before meeting head of femur.

Size near that of *A. progrenes* and male *A. ocellata*, but shaft wide proximally. Proximal width (head eroded), 25.5+; width below head, 21.4; least width of shaft, 10.4; least depth of shaft, 9.1; width of head (eroded), 9.2+ mm.

Since absence of comparable elements prevents direct comparison, the Knox County specimen is referred to *A. anza* because of agreement in geologic horizon, general size, and marked expansion of the shaft of the femur (shaft of humerus expanded in type of *A. anza*).

Acknowledgments. I am indebted to Elwyn L. Simons and James A. Hopson for permission to examine Marsh's types and to Claude W. Hibbard for the opportunity to study the fossils from Kansas and Texas. This study was aided by the National Science Foundation through grant number GB-1686.

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Quart. Jour. Florida Acad. Sci. 27(3) 1964